Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 - 3. (Cancelled)

4. (Currently Amended) The filter device of claim [[1]] 17, wherein an interior of said duct is electrically conductive, a periphery of a porous conductive filter element is bonded with electrical continuity to said electrically conductive interior of said duct, and a central portion of said porous conductive filter element is bonded with electrical continuity to a conductive electrode positioned within said duct.

5. (Original) The filter device of claim 4, wherein said duct comprises a metal tube, and said electrode comprises a metal, optionally hollow rod, an outer periphery of said porous conductive filter element bonded with electrical continuity to said tube, and an inner periphery of a hole within said filter element bonded with electrical continuity to said metal rod.

Claims 6 - 8. (Cancelled)

9. (Currently Amended) ~~The filter device of claim 1~~ A filter device suitable for removing particulates from a gas stream, comprising:

a) a duct for conveying a gas stream;

b) positioned in said duct across the flow of gas, at least one electrically resistively heatable porous and conductive filter element,

c) means for providing electrical energy to said porous and conductive filter element for resistively heating said porous and conductive filter element,

wherein said filter element contains a first metal electrode or is bonded with electrical continuity to a first metal electrode to provide a contact area between said filter element and a first electrode and to a second electrode, said filter element providing a conductive path between said first and second electrodes, and wherein the line of electrical contact between said filter element and said first electrode is greater in plan than the line of contact of said filter element and said second electrode, and ~~further comprising increasing~~ wherein the thickness of said filter element increases from its thickness at said first electrode to a greater thickness at said second electrode.

10. (Currently Amended) ~~The filter device of claim 9~~ A filter device suitable for removing particulates from a gas stream, comprising:

a) a duct for conveying a gas stream;

b) positioned in said duct across the flow of gas, at least one electrically resistively heatable porous and conductive filter element,

c) means for providing electrical energy to said porous and conductive filter element for resistively heating said porous and conductive filter element,

wherein said filter element contains a first metal electrode or is bonded with electrical continuity to a first metal electrode to provide a contact area between said filter element and a first electrode and to a second electrode, said filter element providing a conductive path between said first and second electrodes, and wherein the line of electrical contact between said filter element and said first electrode is greater in plan than the line of contact of said filter element and said second electrode, wherein said filter element has a circular cross-section and a thickness in a direction orthogonal to said circular cross-section, an outer periphery bonded to a first electrode, and a centrally located hole bonded to a centrally located second electrode, and wherein the thickness of said filter element ~~increasing~~ increases from its thickness at said first electrode to a greater thickness at said second electrode.

11. (Currently Amended) A process for the filtration of a gas stream comprising thermally deactivatable particulates, comprising:

a) providing a filter device of claim [[1]] 17, and

b1) heating one or more of said at least one filter element(s) of said filter device by passing an electric current through said one or more filter elements to provide one or more heated filter elements, and

c1) passing said gas through said one or more heated filter elements; and/or

b2) passing said gas through said one or more filter elements of said filter device, thereby trapping particulates on one or more filter elements, and

c2) heating at least one of said one or more filter elements to a high temperature sufficient to destroy particulates trapped thereon or to render pathogens trapped thereon non-viable, and

d) obtaining from an exit of said filter device a gas stream depleted of particulates and/or viable pathogens.

12. (Original) The process of claim 11, wherein said filter device is employed to filter a stream of gas containing or potentially containing at least one pathogenic microorganism, and wherein at least one filter element is resistively heated to a temperature such that the microorganisms are rendered non-viable.

13. (Original) The process of claim 12, wherein said microorganism is one or more selected from the group consisting of those causing the symptoms of anthrax, SARS, tuberculosis, smallpox, pneumonia and ebola.

Claims 14 - 15. (Cancelled)

16. (Original) The process of claim 12, wherein heated gas exiting said filter device is routed through a heat exchanger and a gas stream to be passed through said filter device is also routed through said heat exchanger, said gas stream being heated and said heated gas being cooled by transfer of heat in said heat exchanger.

17. (New) A filter device for inactivation of pathogens from an air stream, comprising:

a) a duct for conveying an inlet air stream
b) positioned in said duct across the flow of gas, at least one electrically resistively heatable porous and conductive filter element,
c) means for providing electrical energy to said porous and conductive filter element for resistively heating said porous and conductive filter element,

wherein said porous and conductive filter element comprises a sintered metal or metal foam element having a front surface facing the inlet air stream and a back surface facing away from the inlet air stream, the filter element having a thickness contour between said front surface and said back surface such that the electrical current distribution over cross-sections of the filter element perpendicular to the direction of current flow is substantially constant, such that a substantially constant temperature is maintained across the filter element.

18. (New) The device of claim 17, wherein the filter elements are planar rectangular elements having electrical contacts along two opposing edges of the rectangular elements.

19. (New) The device of claim 17, wherein the filter elements are hollow disks having a central hole and an inner and an outer periphery, one electrical contact along the inner periphery of the hole of the element, and a second electrode along the outer periphery, the thickness of the element decreasing from the thickness at the inner periphery to the outer periphery.

20. (New) The device of claim 17, wherein the filter element comprises a metal foam.

21. (New) The device of claim 18, wherein the filter element comprises a metal foam.

22. (New) The device of claim 19, wherein the filter element comprises a metal foam.

23. (New) The process of claim 11, wherein the filter element temperature is maintained between 60°C and 200°C.

24. (New) The process of claim 11, wherein the filter element temperature is maintained between 100°C and 150°C.